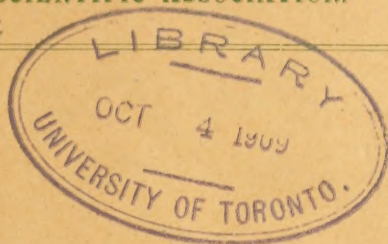


THE BULLETIN

of the

PICTOU ACADEMY SCIENTIFIC ASSOCIATION.

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Notes on the Erysiphaceae and Perisporiaceae of Pictou.

The Club Mosses of Pictou County.

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VOL. 1.

PICTOU ACADEMY, JUNE 1909.

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THE PICTOU ACADEMY SCIENTIFIC ASSOCIATION was instituted in 1882, and during the earlier years of its existence much valuable work was done by the various clubs of which it was composed, in making collections of the local fauna and flora and in stimulating interest among the students of the institution in Scientific work. These collections have been largely preserved in the Museum of the Academy and have been added to from time to time since. In later years, however, the laboratory classes to a great extent usurped the place of the old working clubs and the Scientific Association ceased to be a factor in the life of the Academy as a working organization. During the past session it was re-organized and in order that a record might be had of any work done by its members which might be of more general and permanent interest it was decided to publish bulletins from time to time, in which the results of such work might be preserved. The present number is the fourth of such publications.

Membership in the Association is open to all Academy students and alumni and to others, as associate members, who are interested in the work of the institution. A nominal fee of fifty cents per annum is exacted of members who wish to receive copies of the Bulletin as issued.

The officers for the current year are:

Hon. President.—R. McLellan, LL. D.

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Sec'y-Treas.—H. F. Munro, B. A.

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Notes on the Erysiphaceae and Perisporiaceae of Pictou.

H. H. MUSSELLS AND E. T. PARKER, 1906—1907.

The Erysiphaceae, commonly known as White Mildews, may be easily recognized by the white, dusty or web-like coating they form on the leaves or other succulent parts of common plants. They reach their full development in the fall, when they may be seen scattered over the whitened surface of the leaves.

The mycelium consists of numerous slender white threads that branch widely and extend over the leaf in any direction. They send out at irregular intervals short branches (haustoria) which penetrate the epidermal cells, serving for the attachment of the fungus and probably also for its nourishment.

These haustoria present several forms and are of some importance in the classification of the species.

The conidia or asexual reproductive bodies are simple colorless cells, filled with protoplasm. They are formed by the division of vertical branches of the mycelium. The terminal cells soon become rounded off and the others follow in quick succession. Thus there is soon formed a row of spores or conidia. Soon after, these fall off, and, pushing out a new tube, germinate into a new plant.

In the summer or autumn, usually when the vitality of the plant begins to diminish, the formation of conidia is superseded by that of perithecia containing ascospores. Their function is to carry the fungus in a dormant condition over winter.

When young a perithecium is colorless. It soon becomes yellowish and when mature is dark brown or black, usually globose or globose-depressed, and large enough to be visible to the naked eye. It is provided with outgrowths, called appendages, very characteristic of this family. These present many forms, and, with the number of asci, are the characters on which the genera are based. The contained asci and spores escape in the spring by the irregular rupture of the wall of the perithecium. The asci are colorless sacs, stalked or sessile, the spores colorless and unseptate.

The following specimens have been examined :

Erysiphaceae.

1.—UNCINULA SALICIS D C. On *Salix discolor*. Amphigenous, very scanty on upper side of the leaves of the host.

2.—UNCINULA CIRCINATA C. & P. On *Acer rubrum*; about 16 asci; mycelium wanting.

3.—MICROSPHAERA VACCINII Schw. On *Epigaea repens*. Also on *Gaylussacia resinosa*.

4.—PODOSPHAERA OXYACANTHAE D C. On *Spiraea tomentosa*. Amphigenous; only one ascus; mycelium not abundant.

5.—MICROSPHAERA ALNI D C. On *Viburnum cassinoides* and *Syringa vulgaris*. Amphigenous; no mycelium.

6.—SPHAEROTHECA CASTAGNEI Lev. On *Bidens frondosa*.

7.—ERYSIPHE GALEOPSIDES D C.

8.—ERYSIPHE COMMUNIS Wallr. On *Oenothera biennis*, *Scutellaria lateriflora* and *Aquilegia communis*.

Perisporiaceae.

In this family the conidia-bearing mycelium is brown and persistent. The perithecia spherical or depressed, membranous and always superficial.

1.—SACCARDIA QUERCINA Schw. On *Bidens*.

II.—DIMEROSPORIUM COLLINSII, Schw. On *Amelanchier canadensis*.



The Club Mosses of Pictou County.

MINNIE BERRINGER.—'09.

The following club mosses were collected within a radius of two miles of Pictou town. Three of them *L. inundatum*, *L. sitchense*, and *L. sabinaefolium* are rare. The first named was found only in two places which were low and wet. The other two, not reported before from Nova Scotia, were collected in April, 1909.

The remaining four species are very plentiful. The collection includes all species reported from Nova Scotia. The nomenclature is that of "Gray's New Manual of Botany."

Genus, *Lycopodium* L.

LYCOPODIUM LUCIDULUM Michx., commonly known as shining club moss on account of its dark green shining leaves. Grows in wet woods. In addition to bearing spores it is also propagated by bud-like organs known as gemmae which fall to the ground and become new plants.

LYCOPODIUM ANNOTINUM L. Owing to its rigidity in comparison with the other mosses it is called, stiff club moss. The leaves are of a paler green than the others; very common in all cool woods.

LYCOPODIUM CLAVATUM L. Known as common club moss or running pine; its stems extensively creeping; leaves are bristle-tipped; quite common in dry woods.

LYCOPODIUM OBSCURUM L. The variety *dendroideum* only was collected. It differs from *L. obscurum* chiefly in the number of spikes, there being from 1—15 on the variety and only 1—3 on the other. Commonly known as ground pine.

LYCOPODIUM CONPLANATUM L. Variety *flabelliforme* only was collected; usually known as trailing Christmas green; root-stock nearly superficial; leaves overlapping, having a lower leaf covering base of next higher and forming a flat surface; branches spreading in a fan-like manner. Found in dry, open woods.

LYCOPODIUM INUNDATUM L. Dwarfed, having sterile stems creeping and fertile stems erect; rare in this locality; found in low, wet places; hence sometimes called bog club moss.

LYCOPODIUM SITCHENSE Rupr. Also rare, not reported before from Nova Scotia, not easily distinguished from *L. sabinaefolium*.

LYCOPODIUM SABINAEFOLIUM Willd. In habit similar to *L. sitchense*; branches however are larger and leaves on lower surface smaller than those on upper; also reported for the first time from Nova Scotia.

The Erysiphaceae of Pictou County.

The study of a collection of *Erysiphaceae* was undertaken as special work by members of the 'A' botany class. The collections were found to include all the genera, and many of the species likely to be found in Nova Scotia, so it was thought advisable to publish their work as an aid to beginners in the study of this interesting family. The members of the class and their part of the work was as follows:—

Podosphaera, John Cameron; *Uncinula*, Annetta Bishop; *Microsphaera*, Emily Spicer and Emeline MacKenzie; *Erysiphe*, John Craigie; *Phyllactinia*, Mabel McKay and Jean Henry.

The collections were made during the Summer and Fall of 1908 by W. P. Fraser, under whose supervision the work was done in the laboratory of Pictou Academy.

The ERYSIPHACEAE or Powdery Mildews have a world-wide distribution. They are most common in north temperate regions. Salmon in his Monograph reports 30 species and 7 varieties from North America. Of these from 20 to 25 species and 3 varieties are likely to occur in Nova Scotia. The collections here described include 15 species and 2 varieties, six of these *Sphaerotheca humili*, *S. morsuuae*, *Microsphaera grossulariae*, *M. diffusa*, *M. Russellii* and *Erysiphe graminis* are reported for the first time from Nova Scotia.

The Powdery Mildews often cause destructive diseases of garden and field crops. The Bordeaux mixture, potassium sulphide solution and flowers of sulphur have been found effective in controlling their ravages. They do not seem to cause much damage in Nova Scotia.

In Dr. A. H. MacKay's "First Supplementary List: Fungi of Nova Scotia;" Proceedings and Transactions of the N. S. Institute of Science, C. L. Moore reports 13 species from Pictou County. Messrs. Mussells and Parker collected in the vicinity of Pictou during 1905. Their list of 8 species is published in this number of the BULLETIN.

The nomenclature and classification is that of Salmon in his "Monograph of the Erysiphaceae." Memoirs of the Torrey Botanical Club, No. 9. "Gray's New Manual of Botany" was used in determining the host plants. In a few cases of difficulty, specimens of the host plants were submitted to Dr. John Macoun, Naturalist, Geol. Survey, Ottawa.

The description of the family is largely based on Salmon's Monograph. Measurements, enclosed in brackets, in the descriptions of the species are also adopted from that work.

Erysiphaceae Lev.

Parasitic on flowering plants; vegetative mycelium white but becoming brown in some species with age, external to the host plant and adhering to it by means of

haustoria, or (*Phyllactinia*) sending special branches of the mycelium into the stomata of the host plant, and from these branches haustoria enter the surrounding cells; hyphae much branched and interwoven; conidia large, one celled, borne on erect, simple conidiophores; perithecia sessile, at first colorless, then yellow, becoming dark brown or black, indehiscent, globose or somewhat flattened; appendages springing from the outer wall of perithecium, similar to the mycelium or quite distinct, simple or definitely branched at the apex, sometimes colored; asci arising from the base of the perithecium, one or many, colorless, usually stalked; spores 2—8, non-septate, colorless.

KEY TO GENERA.

Appendages of the perithecium similar to the mycelium and often interwoven with it, not branched in a definite manner at the apex.

- One ascus..... Sphaerotheca.
Several asci..... Erysiphe.

Appendages of the perithecium unlike the mycelium, not interwoven with it, coiled at the tips, needle shaped and expanded at the base or branched in a definite manner.

Appendages simple

- Coiled at apexUncinula.
Needle-shaped and swollen at base...Phyllactinia.

Appendages branched in a definite manner at apex.

- One Ascus Podosphaera.
Several Asci Microsphaera.

Podosphaera Kunze.

Perithecia with a single ascus; appendages dichotomously branched at the apex; spores 8.

PODOSPHAERA OXYACANTHAE (D C.) de Bary.

Amphigenous, mycelium persistent, effused; perithecia scattered, sub-globose, 74—100 microns in diameter; appendages variable in length even on the same perithecium; 4—20 in number, about twice as long as the diameter of the perithecium, septate, dark brown for more than half their length, smooth, thick walled, apex usually four times dichotomously branched, ultimate branches rounded or knob-shaped; ascus broadly ovate or oval, variable in size, 60-70x46-56 microns; spores 8, 8-11x20-22 microns.

On *Spirea tomentosa*; *S. latifolia*; *Pyrus melanocarpa*; Pictou.

This mildew is common in the hosts named above in the vicinity of Pictou. The appendages average larger on *Pyrus melanocarpa* than on the others. It may also be looked for on *Crataegus*.

P. OXYACANTHAE is known as the cherry or apple powdery mildew as it frequently attacks these trees. *P. biuncinata* on *Hamamelis virginiana* has been reported from Ontario and may occur in Nova Scotia. It can be easily recognized by its long, spreading colorless appendages usually only once branched.

Sphaerotheca Lev.

Perithecia sub-globose; ascus solitary, 8-spored; appendages brown or colorless, spreading horizontally, simple or vaguely branched, often interwoven with the mycelium, sometimes obsolete.

KEY TO NOVA SCOTIA SPECIES OF SPHAEROTHECA.

Perithecia immersed in thick and dense dark brown mycelium.....3. *S. mors-uvae*
Mycelium not thick and dense.

Cells of outer wall of perithecium 10-20 microns wide1. *S. humili*
Cell of outer wall of perithecium 20-30 microns wide.....2. *S. humili fuliginea*

1. SPHAEROTHECA HUMILI (D C.) Burr.

Amphigenous; mycelium disappearing or persistent; perithecia scattered or gregarious, about 80-100 microns in diameter, cells small; appendages variable in number and in length, colored brown or rarely white; ascus elliptical to subglobose (45-90x50-70 microns); spores 8, averaging 22x15 microns.

On *Agrimonia gryposepala*, New Glasgow; *Rosa* sp., New Glasgow, Loch Broom; (*Rubus ideaus* var. *aculeatissimus*, Truro.)

The form on *Rosa* has been commonly reported in America as *S. pannosa*. Salmon place it in this species. The white, shining appendages make it a very marked form.

2. SPHAEROTHECA HUMILI, var. FULIGINEA (Schl.) Salmon.

Perithecia usually smaller with larger cells.

On *Bidens frondosa*, New Glasgow, Durham, Pictou, Piedmont; *Bidens cernua*, Pictou; *Taraxicum officinale*, New Glasgow; *Prunella vulgaris*, Piedmont; *Prenanthes altissima*, Pictou, New Glasgow, Durham.

This variety is regarded by some botanists as a separate species. *S. Castagnei* Lev.

3. SPHAEROTHECA MORS-UVAE (Schwein) Berk. & Curtis.

Amphigenous; Mycelium persistent forming dense patches which become brown; perithecia gregarious, immersed in the mycelium, subglobose, averaging 75 microns in diameter; appendages few, pale brown, ascus (70-90x50-62 microns,) Spores 20-25x12-15 microns.

On *Ribes nigrum*, Pictou.

This species causes the diseases of gooseberries so troublesome in America and is known as the "gooseberry mildew". It attacks the fruit and destroys it. It has not been reported as troublesome in Nova Scotia.

Uncinula Lev.

The genus *Uncinula* is distinguished from the other genera of the *Erysiphaceae* by the uncinata or coiled tips of the appendages; the perithecia are usually globose or lenticular and the appendages simple and usually colorless.

KEY TO NOVA SCOTIA SPECIES OF UNCINULA.

- Asci 4-6 spored*U. circinata*
Asci 8 spored*U. salicis*

1. UNCINULA CIRCINATA Cooke & Peck.

Hypophyllous, sometimes amphigenous; mycelium sub-persistent, effused; perithecia scattered, globose or lenticular, 144-168 microns in diameter; appendages many, slightly longer than the diameter of the perithecium, colorless, thin walled, unseptate, simple coiled at tips; asci numerous, oval 68-75x24-34 microns; spores 8, about 11x19 microns.

On *Acer rubrum*, Scotsburn.

2. UNCINULA SALICIS (D C.) Winter.

Amphigenous; mycelium persistent or evanescent, effused; perithecia scattered, globose or lenticular, 112-144 microns in diameter, appendages many, about equal in length to the diameter of the perithecium, smooth, colorless, thin walled, unseptate, coiled at tips; asci numerous, 55-63x38-41 microns; spores 4-6.

On *Salix*, New Glasgow, Scotsburn.

These two specimens are much alike in appearance. They can be separated easily by the number of spores in the asci.

Collections of a mildew on *Populus tremuloides* were made at Pictou and Abercrombie, but the specimens were lost. The mildew was probably *U. salicis*.

Besides the species described *U. necator*, the vine mildew which has colored appendages, *U. macrospora* with two spored asci, and *U. flexuosa* with flexuose appendages may occur in Nova Scotia.

Microsphaera Lev.

Perithecia with several asci; appendages not interwoven with the mycelium, more or less dichotomously branched at the apex; asci 2-8 spored.

KEY TO NOVA SCOTIA SPECIES OF MICROSPHAERA.

Tips of appendages recurved when mature.

- Appendages short $\frac{2}{3}$ -2½ times diameter of the peritheclum.....1. *M. alui*
Appendages long, more than 2½ times the diameter of the
perethicum.....2. *M. alui vaccinii*

Tips of appendages not recurved when mature.

Appendages colored5. *M. Russellii*

Appendages hyaline.

Appendages 2-7 times the diameter of the perithecium,

branching lax4. *M. diffusa*

Appendages less than 2 times the diameter of the per-

ithecium.....3. *M. grossulariae*

1. MICROSPHAERA ALNI (Wallr.) Winter.

Amphigenous; mycelium evanescent or persistent, effused; perithecia globose-depressed, 72-114 microns in diameter; appendages 5-25 in number; $2\frac{1}{3}$ - $2\frac{1}{2}$ diameter of the perithecium, generally rigid, smooth, colorless or slightly brown at base, usually aseptate, apex 3-6 times branched, tips of branches recurved; asci 3-8, ovate or oval 35-55x24-44 microns, usually short stalked; spores 4-8, (18-23x10-12 microns.)

On *Syringa vulgaris*, Pictou, New Glasgow, Durham. *Alnus incana* and *Alnus crispa*, Abercrombie; *Corylus rostrata* and *Ilex verticillata* var. *tenuifolia*, Scotsburn; (*Betula lutea*, Truro.)

M. crinophila Pk. a form with colored appendages which occurs on the leaves of *Fagus ferruginea* is classed with *M. alni* by Salmon. He considers the presence or absence of color in the appendages as of no systematic value.

On a single shrub of *Alnus crispa* no less than three mildews were collected. The leaves were covered on the under side with *M. alni* and *Phyllactinia corylea*, and the fertile aments with *Erysiphe graminis*.

2. MICROSPHAERA ALNI var. VACCINII (Schwein.) Salmon.

Epiphyllous or rarely amphigenous; mycelium persistent, thin and effused, perithecia scattered, globose, 72-96-microns in diameter; appendages 3-16, 5-9-times the diameter of the perithecium, thin walled and delicate, flexuose, 3-4 times dichotomously branched, tips of ultimate branches recurved; asci 2-13, about 31x55 microns ovate or ovate-oblong, spores 4-6.

On *Epigaea repens*, Durham, Pictou; *Vaccinium Canadense*, Pictou, Loch Broom; *Gaylussacia resinosa*, Pictou.

American botanists regard this variety as a separate species. It can be easily distinguished from *M. alni* by the long flaccid appendages. It is common in the vicinity of Pictou on the huckleberry. Specimens were also collected on *Lonicera* which may belong here, but they need further study.

3. MICROSPHAERA GROSSULARIAE (Wallr.) Lev.

Amphigenous; mycelium sub-persistent or evanescent, thin and effused; perithecia globose-depressed, usually 80-100-microns in diameter, appendages 5-15 in number, 1- $1\frac{3}{4}$ diameter of perithecium, thick walled at base, thin at apex, smooth, colorless, aseptate, apex dichotomously branched 4-5 times, ultimate branches straight and rather long, tips not recurved; asci 4-10, about 55x33 microns, broadly ovate, short stalked; spores 4-6.

On *Sambucus canadensis*, New Glasgow, Pictou, Scotsburn.

The branching of the apex of the appendages presents a digitate appearance. The species is a well marked and beautiful one. In Europe *M. grossulariae* causes a disease of gooseberries. It does not attack them in North America.

4. MICROSPHAERA DIFFUSA Cooke & Peck.

Amphigenous; mycelium sub-persistent or evanescent, effused; perithecia epiphyllous, scattered, about 70-100 microns in diameter; appendages variable in number and in length, 2-7 times the diameter of the perithecium, smooth, aseptate, (or 1-3 septate) pale brown near base, apex dichotomously or sub-dichotomously branched, branching irregular, tips of ultimate branches not recurved; asci usually about 6, about 55x20 microns, ovate oblong, short stalked, spores usually 4.

On *Desmodium canadense*, Durham.

A good specific distinction is found in the irregular, diffuse branching of the appendages. Sometimes the branches appear as lateral outgrowths. It is very variable in most of its characters.

5. MICROSPHAERA RUSSELLII Clinton.

Amphigeneous; mycelium evanescent or sub-persistent, effused; perithecia scattered, globose-depressed, 56-100 microns in diameter; appendages 8-15, 4-6 times the diameter of the perithecium, smooth, colored dark brown nearly to the apex, septate, thick walled, flexuose, 2-4 times dichotomously branched at the apex, branching lax and irregular, ultimate branches not recurved; asci about 4-7, averaging 52x27 microns, ovate-oblong, short-stalked, spores usually 4, (18-22x10-12 microns.)

On *Oxalis corniculata* var. *stricta*, New Glasgow, Scotsburn.

This species is sharply marked off from all other species of this genus by its long, flaccid, colored appendages. They mature slowly so that the branching appears late in the season.

Erysiphe D C.

Perithecia globose or globose-depressed; asci several, 2-8 spored, appendages resembling the mycelium and often interwoven with it, sometimes absent.

KEY TO NOVA SCOTIA SPECIES OF ERYSIPIHE.

Perithecia immersed in the persistent mycelium; asci usually without spores.....4. *E. graminis*

Perithecia not immersed in mycelium.

Asci 2 spored, haustoria not lobed2. *E. cichoracearum*

Asci without spores, haustoria lobed.....3. *E. galeopsidis*

Asci 3-8 spored.

Perithecia small, usually about 90 microns, asci

few, 2-8 usually 1. *E. polygoni*

Perithecia large, usually about 280 microns, asci

usually about 20.....5. *E. aggregata*

1. ERYSIPHE POLYGONI D C.

Amphigenous; mycelium variable, persistent, thin, effused or thick and dense or evenescent; perithecia scattered or gregarious, usually about 90 microns in diameter; appendages variable in number and length, usually several times the diameter of the perithecium, flexuose and interwoven with the mycelium, usually brown at base; asci 3-8, variable (46-72x30-45 microns,) spores 3-8, (19-25x9-14 microns.)

On *Ranunculus acris*, New Glasgow; *Thalictrum*, Scotsburn, Lyon's Brook; *Oenothera biennis*, Pictou, Scotsburn; *Aquilegia vulgaris*, Pictou.

E. Polygoni (*E. communis* of many authors) is found on *Thalictrum* in shaded situations. On this host it forms dense pannose patches on the leaves and stem on which the perithecia are embedded. The other collections did not show this feature, the mycelium being thin or evanescent at maturity.

2. ERYSIPHE CICHORACEARUM D C.

Amphigenous; mycelium persistent or evanescent, white; perithecia scattered or gregarious, 90-150 microns in diameter; appendages variable in length, septate, light or dark brown throughout; asci numerous, 8-30, stalked, 57-80x27-40; spores usually 2, rarely more, about 24x13 microns.

On *Aster* species, Scotsburn, Pictou, Lyon's Brook; *Solidago flexicaulis*, Scotsburn; *Solidago* species, Pictou, New Glasgow; [*Eupatorium perfoliatum*, Truro;] *Scutellaria lateriflora*, Pictou; *Plantago major*, Pictou, New Glasgow, Scotsburn, Piedmont.

E. cichoracearum is very common on *Solidago* and *Aster* as well as on *Plantago*. It is doubtless generally distributed. This species can be recognized by the numerous, regularly 2-spored asci. It has often been confused with *E. polygoni*.

A mildew was collected at Truro, [Col. Co.,] on *Lactuca* which was probably this species. It was parasitised by *Ampelomyces quisqualis*.

3. ERYSIPHE GALEOPSISIDIS D C.

On *Chelone glabra*, Pictou, Durham and New Glasgow.

E. galeopsides differs from *E. cichoracearum* only in the absence of spores and the presence of lobed haustoria. It is common on *Chelone* in shaded places.

4. ERYSIPHE GRAMINIS D C.

Epiphyllous; mycelium persistent, forming patches in which the perithecia are immersed; perithecia large about 200 microns in diameter; appendages rudimentary; asci numerous; spores usually none [4 or 8 when present.]

On undetermined grass, Pictou.

E. graminis is characterized by the large perithecium and the numerous asci. It occasionally causes serious damage to grain crops. It is confined to the grasses. [*Gramineae*.]

5. ERYSIPHE AGGREGATA [Peck] Farlow.

Mycelium vanishing or persistent; perithecia densely gregarious, globose-depressed, variable in size; appendages numerous, interwoven, branched, colorless, 1-4 times diameter of perithecium in length. About 200 microns in diameter; asci numerous, usually about 20, large, oblong-ovate to cylindrical. About 100x35 microns; spores 8, somewhat round or oval 12-15x14-18 microns.

On *Alnus incana*, Pictou, Abercrombie, New Glasgow. *Alnus crispa*, Abercrombie.

The present species is very common on the female catkins of *Alnus incana* in the vicinity of Pictou. Only one collection was made on *Alnus crispa*. The catkins attacked do not attain their full size or mature seed.

Phyllactina Lev.

Perithecia with simple needle-shaped appendages with a swollen base; asci several.

PHYLLACTINIA CORYLEA [Pers.] Karst.

Usually hypophyllous, rarely amphigenous; mycelium persistent or evanescent; perithecia scattered or somewhat gregarious, large, globose or globose-depressed, 190-275 microns in diameter; appendages usually 6-12, 1-3 times the diameter of the perithecium, smooth, acicular, straight, aseptate, colorless, swollen at base into a bulb; asci numerous; spores 2, rarely 3, variable in size, 18-24x 30-40 microns.

On *Corylus rostrata*, Scotsburn, Piedmont. *Alnus incana*, *Alnus crispa*, Pictou, Abercrombie. *Ostrya virginica*, Scotsburn.

P. corylea (*P. suffulta* of some authors) is very common in *Alnus incana* in the vicinity of Pictou. It is doubtless widely distributed in this host and on *Corylus rostrata*. This species can be recognized by the naked eye on account of the large size of the perithecia. Besides the true appendages there are numerous densely crowded, short, delicate, hyaline appendages which spring from the apical cells of the perithecium. These appendages at a certain stage become mucilaginous and probably aid in attaching the perithecium to the substratum.

Note on Bohemian Waxwing.

A flock of Bohemian Waxwings, about twenty-five in number, spent the Winter of 1908-9 in the vicinity of Pictou. They appeared toward the last of November and remained till early in March. Mr. Scott Dawson, taxidermist, of Pictou, who first observed them, secured most of the flock for mounting purposes. Two specimens have been placed in the Museum of Pictou Academy and others have been obtained by various provincial institutions. The Bohemian Waxwing is a rare visitant to Nova Scotia, being a bird of more northerly habitat. Only one record of its occurrence in Nova Scotia is available, that of Mr. Downs, who reported a small flock near Halifax in 1865.

H. F. MUNRO.

